Biological Evaluation of *Lymantria dispar dispar*

at

Grey Towers National Historic Site

Prepared by

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Introduction

On October 19, 2021, personnel from USDA Forest Service, Eastern Region, State and Private Forestry, Forest Health Protection, Morgantown, WV visited Grey Towers National Historic Site in Milford, PA to conduct a *Lymantria dispar dispar* (LDD) egg mass survey, and to determine population levels and the need for treatment in FY2022. Current populations are insufficient to cause noticeable defoliation and no treatment is recommend at Grey Towers in FY2022.

Methods

Survey plots were randomly selected based upon available host trees (oak species) at Grey Towers.

At each sample point, a 1/40th acre fixed radius plot was established. The plots consisted of a tally of all new egg masses observed on overstory trees, understory vegetation, ground litter and duff. The total number of new egg masses observed for each plot was multiplied by 40 to determine the number of egg masses per acre (Leibhold et al. 1994).

Defoliation predictions for 2022 are based on the egg mass density, threshold, egg mass length, population trends, and species composition (Liebhold et al. 1994, Leibhold et al. 1993; Table 1). Intervention thresholds were established on resource management objectives and nuisance abatement, and the prevention of defoliation (Table 1).

Table 1. *2021 Lymantria dispar dispar egg mass density thresholds for resource management objectives on the Grey Towers HNS, Milford, PA.*

Threshold (egg masses/acres)	Predicted Defoliation	Objectives
250	< 30[1] %	Nuisance Abatement
251-500	30 - 40 % (Light)	Prevent Noticeable Defoliation
501-1000	41 - 60 % (Moderate)	Prevent Growth Loss
>1000	> 60 % (Heavy)	Prevent Mortality

[1] None or background level of defoliation.

Egg mass length was measured at most of the plots to determine the overall "health" of the existing population and as a measure of egg mass fecundity. Small egg masses (<20 mm in length) are indicative of a declining population, while large egg masses (>30 mm in length) of an increasing population (Liebhold et al. 1994).

Results

The locations of the survey plots are shown in Figure 1.

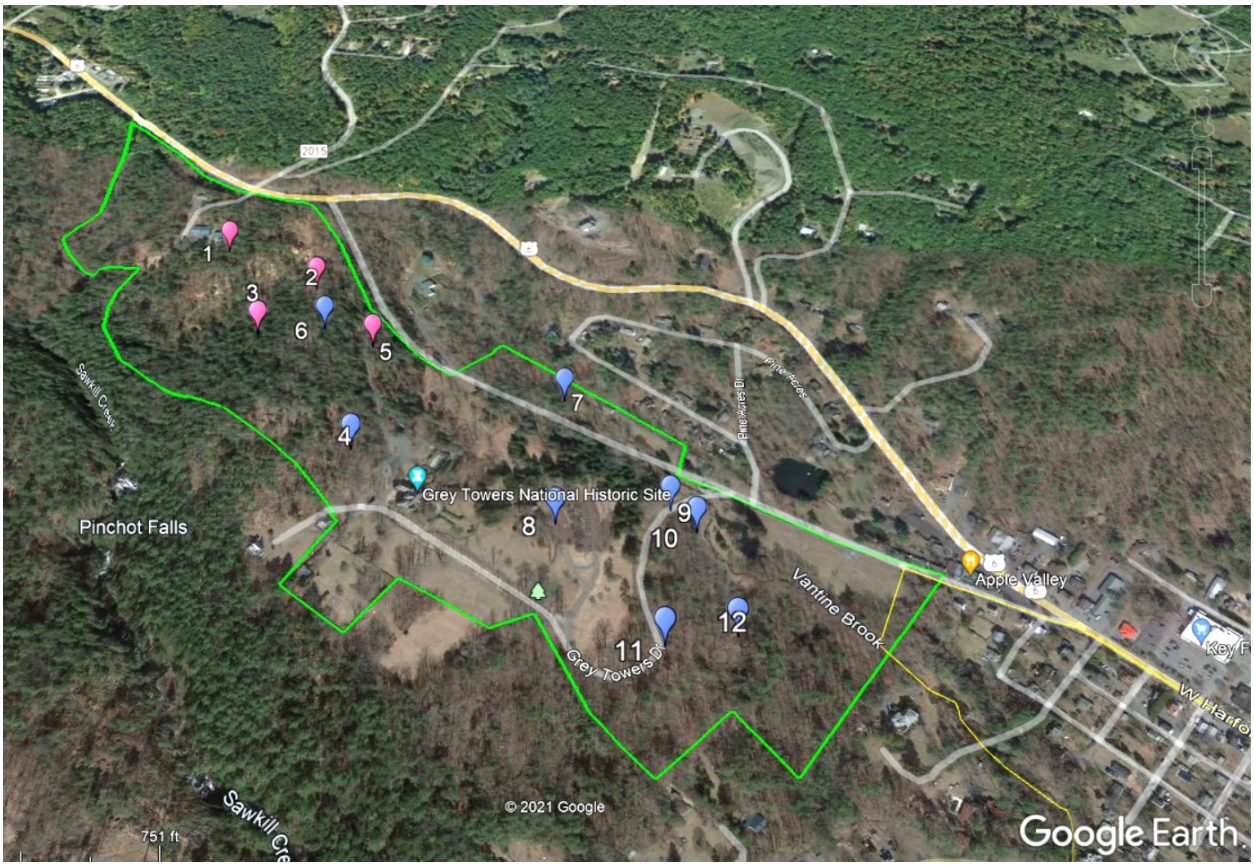

Figure 1. Location of the *Lymantria dispar dispar* egg mass survey plots at Grey Towers NHS, October 19, 2021. Pink equals 1 egg mass per 1/40th acre plot and blue equals zero egg masses per plot.

A total of 12 plots were established. Only 4 egg masses were detected on the entire site. Egg mass densities per acre at Grey Towers NHS ranged from 0-40 and averaged less than one egg masses per acre. Overall average egg mass lengths ranged from 20-54 mm and averaged 42 mm. Only one old egg mass was seen during the survey.

Recommendation

Current populations are insufficient to cause noticeable defoliation. No treatment is recommended in FY2022. The larger egg mass size indicates the population is building and over the next few years it is suggested to keep an eye out for an increasing population.

References

Liebhold, A.M., K. Thorpe, J. Ghent, and D.B. Lyons. 1994. Gypsy Moth Egg Mass Sampling for a Decision-Making: A Users' Guide. USDA Forest Service, Technical Bulletin NA-TP-04-94 pp. 21.

Liebhold, A.M., Simons, E.E., Sior, A., and Unger, J.D. 1993. Forecasting defoliation caused by the gypsy moth from field measurements. Environ. Entomol. 22(1): 26-32.